Claims

1. An isolated polynucleotide selected from the group consisting of:
    d. a polynucleotide sequence of SEQ ID NO:1;
    e. a naturally-occurring polynucleotide sequence having at least 90% sequence identity to the sequence of SEQ ID NO:1; and
    f. a polynucleotide sequence complementary to either a) or b).

2. An isolated polynucleotide sequence encoding a polypeptide comprising an amino acid sequence selected from the group consisting of:
    e. SEQ ID NO: 8;
    f. a naturally-occurring amino acid sequence having at least 90% sequence identity to the sequence of SEQ ID NO:8;
    g. a biologically-active fragment of the amino acid sequence of SEQ ID NO:8; and
    h. an immunogenic fragment of the amino acid sequence of SEQ ID NO:8.

3. An isolated polynucleotide selected from the group consisting of:
    d. a polynucleotide sequence selected from the group consisting of SEQ ID NOs: 2-7;
    e. a naturally-occurring polynucleotide sequence having at least 90% sequence identity to a sequence selected from the group consisting of SEQ ID NOs: 2-7; and
    f. a polynucleotide sequence complementary to either a) or b).

4. An isolated polypeptide sequence comprising an amino acid sequence selected from the group consisting of:
    e) an amino acid sequence of SEQ ID NO. 8;
    f) a naturally-occurring amino acid sequence having at least 90% sequence identity to the amino acid sequence of SEQ ID NO. 8;

g) a biologically active fragment of the amino acid sequence of SEQ ID NO. 8; and

h) an immunogenic fragment of the amino acid sequence of SEQ ID NO. 8.

5. An isolated polypeptide fragment capable of generating an immune response against the SARS virus selected from the group consisting of

c. a polypeptide sequence selected from the group consisting of SEQ ID NOs: 9-14;

d. a naturally-occurring polypeptide sequence having at least 90% sequence identity to a sequence selected from the group consisting of SEQ ID NOs: 9-14.

6. An isolated antibody which specifically binds to a polypeptide of claim 4.

7. An isolated antibody which specifically binds to a polypeptide of claim 5.

8. The isolated antibody of claim 6, wherein said antibody is a monoclonal antibody.

9. The isolated antibody of claim 7, wherein said antibody is a monoclonal antibody.

10. A pharmaceutical composition comprising an effective amount of the polypeptide of claim 4 and a pharmaceutically acceptable carrier.

11. A pharmaceutical composition comprising an effective amount of the polypeptide of claim 5 and a pharmaceutically acceptable carrier.

12. A pharmaceutical composition comprising an effective amount of the polynucleotide of claim 1 and a pharmaceutically acceptable carrier.

13. A pharmaceutical composition comprising an effective amount of the polynucleotide of claim 2 and a pharmaceutically acceptable carrier.

14. A pharmaceutical composition comprising an effective amount of the polynucleotide of claim 3 and a pharmaceutically acceptable carrier.

15. A pharmaceutical composition comprising the antibody of claim 6 in conjunction with a pharmaceutically acceptable carrier.

16. A pharmaceutical composition comprising the antibody of claim 7 in conjunction with a pharmaceutically acceptable carrier.

17. A pharmaceutical composition comprising the antibody of claim 8 in conjunction with a pharmaceutically acceptable carrier.

18. A pharmaceutical composition comprising the antibody of claim 9 in conjunction with a pharmaceutically acceptable carrier.

19. A diagnostic kit for detecting the presence of SARS virus in a sample comprising the polynucleotide of claim 1 and a pharmaceutically acceptable carrier.

20. A diagnostic kit for detecting the presence of SARS virus in a sample comprising the polynucleotide of claim 2 and a pharmaceutically acceptable carrier.

21. A diagnostic kit for detecting the presence of SARS virus in a sample comprising the polynucleotide of claim 3 and a pharmaceutically acceptable carrier.

22. A probe for use in detecting the presence of SARS virus in a sample comprising at least 20 contiguous polynucleotides comprising a sequence complementary to the SARS viral polynucleotide in the sample, and said probe specifically hybridizes to the SARS viral polynucleotide under conditions whereby a hybridization complex is formed between said probe and said SARS viral polynucleotide.

23. A probe for use in detecting the presence of a specific SARS virus in a sample comprising the polynucleotide sequence of SEQ ID NO: 15.

24. A method of detecting a SARS viral polynucleotide in a sample, said SARS viral polynucleotide having the sequence of the polynucleotide of claim 1, comprising:

c. hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to the SARS viral polynucleotide in the sample, and said probe specifically hybridizes to the SARS viral polynucleotide under conditions whereby a hybridization complex is formed between said probe and said SARS viral polynucleotide; and

d. detecting the presence or absence of said hybridization complex, and optionally, if present, the amount thereof.

25. A method of detecting a SARS viral polynucleotide in a sample, said SARS viral polynucleotide having the sequence of the polynucleotide of claim 2, comprising:

c. hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to the SARS viral polynucleotide in the sample, and said probe specifically hybridizes to the SARS viral polynucleotide under conditions whereby a hybridization complex is formed between said probe and said SARS viral polynucleotide; and

d. detecting the presence or absence of said hybridization complex, and optionally, if present, the amount thereof.

26. A method of detecting a SARS viral polynucleotide in a sample, said SARS viral polynucleotide having the sequence of the polynucleotide of claim 3, comprising:

c. hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to the SARS viral polynucleotide in the sample, and said probe specifically hybridizes to the SARS viral polynucleotide under conditions whereby a hybridization complex is formed between said probe and said SARS viral polynucleotide; and

d. detecting the presence or absence of said hybridization complex, and optionally, if present, the amount thereof.

27. The method of claim 24 above, wherein the probe comprises at least 30 contiguous nucleotides.

28. The method of claim 25 above, wherein the probe comprises at least 30 contiguous nucleotides.

29. The method of claim 26 above, wherein the probe comprises at least 30 contiguous nucleotides.

30. The method of claim 24 above, wherein the probe comprising at least 50 contiguous nucleotides.

31. The method of claim 25 above, wherein the probe comprising at least 50 contiguous nucleotides.

32. The method of claim 26 above, wherein the probe comprising at least 50 contiguous nucleotides.

33. A method for detecting a polynucleotide which encodes a SARS virus protein in a biological sample comprising the steps of:

    c. hybridizing the polynucleotide of claim 1 to a nucleic acid material of a biological sample, thereby forming a hybridization complex; and

    d. detecting said hybridization complex, wherein the presence of said hybridization complex correlates with the presence of a polynucleotide encoding the SARS viral protein in said biological sample.

34. A method for detecting a polynucleotide which encodes a SARS virus protein in a biological sample comprising the steps of:

    c. hybridizing the polynucleotide of claim 2 to a nucleic acid material of a biological sample, thereby forming a hybridization complex; and

    d. detecting said hybridization complex, wherein the presence of said hybridization complex correlates with the presence of a polynucleotide encoding the SARS viral protein in said biological sample.

35. A method for detecting a polynucleotide which encodes a SARS virus protein in a biological sample comprising the steps of:

    c. hybridizing the polynucleotide of claim 3 to a nucleic acid material of a biological sample, thereby forming a hybridization complex; and

    d. detecting said hybridization complex, wherein the presence of said hybridization complex correlates with the presence of a polynucleotide encoding the SARS viral protein in said biological sample.

36. A vaccine effective against a human SARS virus infection comprising a peptide having a sequence selected from the group consisting of SEQ ID NOs: 1-7 and a pharmaceutically acceptable carrier.

37. A vaccine effective against a human SARS virus infection comprising a peptide having a sequence selected from the group consisting of SEQ ID NOs: 8-14 and a pharmaceutically acceptable carrier.

38. A recombinant adenovirus expressing SARS viral proteins, comprising:
    c. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself; and
    d. at least one polypeptide fragment selected from the group consisting of the spike protein, the small membrane protein, the small envelope protein, and the nuclear capsid protein.

39. A recombinant adenovirus expressing SARS viral proteins, comprising:
    c. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself; and
    d. two polypeptide fragments selected from the group consisting of the spike protein, the small membrane protein, the small envelope protein, and the nuclear capsid protein.

40. A recombinant adenovirus expressing SARS viral proteins, comprising:
    c. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself; and
    d. three polypeptide fragments selected from the group consisting of the spike protein, the small membrane protein, the small envelope protein, and the nuclear capsid protein.

41. A recombinant adenovirus expressing SARS viral proteins, comprising:

b. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself; and

b. a plurality of polypeptide fragments selected from the group consisting of the spike protein, the small membrane protein, the small envelop protein, and the nuclear capsid protein.

42. A recombinant adenovirus expressing SARS viral proteins, comprising:

d. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself;

e. the spike protein of the SARS virus; and

f. the small envelop protein.

43. A recombinant adenovirus expressing SARS viral proteins, comprising:

d. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself;

e. the spike protein of the SARS virus; and

f. the small membrane protein.

44. A recombinant adenovirus expressing SARS viral proteins, comprising:

e. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself;

f. the spike protein of the SARS virus;

g. the small membrane protein; and

h. the small envelop protein.

45. A recombinant adenovirus expressing SARS viral proteins, comprising:
    e. an adenovirus, wherein portions of its sequence responsible for replication having been deleted, thus rending the adenovirus incapable of replicating itself;
    f. the small envelope protein;
    g. the small membrane protein; and
    h. the nuclear capsid protein.

46. A SARS vaccine comprising of the recombinant adenovirus of claim 38, and a pharmaceutically acceptable carrier.

47. A SARS vaccine comprising of the recombinant adenovirus of claim 39, and a pharmaceutically acceptable carrier.

48. A SARS vaccine comprising of the recombinant adenovirus of claim 40, and a pharmaceutically acceptable carrier.

49. A SARS vaccine comprising of the recombinant adenovirus of claim 41, and a pharmaceutically acceptable carrier.

50. A SARS vaccine comprising of the recombinant adenovirus of claim 42, and a pharmaceutically acceptable carrier.

51. A SARS vaccine comprising of the recombinant adenovirus of claim 43, and a pharmaceutically acceptable carrier.

52. A SARS vaccine comprising of the recombinant adenovirus of claim 44, and a pharmaceutically acceptable carrier.

53. A SARS vaccine comprising of the recombinant adenovirus of claim 45, and a pharmaceutically acceptable carrier.

54. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 46.

55. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 47.

56. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 48.

57. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 49.

58. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 50.

59. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 51.

60. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 52.

61. A method of modulating the immune response to human SARS virus infection, comprising administering an effective amount of the vaccine according to claim 53.

62. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 46.

63. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 47.

64. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 48.

65. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 49.

66. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 50.

67. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 51.

68. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 52.

69. A method of immunizing a subject against a SARS virus infection comprising administering to said subject the vaccine of claim 53.

70. The method of claim 62, wherein said subject is a human.

71. The method of claim 63, wherein said subject is a human.

72. The method of claim 64, wherein said subject is a human.

73. The method of claim 65, wherein said subject is a human.

74. The method of claim 66, wherein said subject is a human.

75. The method of claim 67, wherein said subject is a human.

76. The method of claim 68, wherein said subject is a human.

77. The method of claim 69, wherein said subject is a human.

78. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 46.

79. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 47.

80. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 48.

81. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 49.

82. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 50.

83. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 51.

84. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 52.

85. A method of treating a SARS virus infection in a subject comprising administering to said subject the vaccine of claim 53.

86. The method of claim 78, wherein said subject is a human.

87. The method of claim 79, wherein said subject is a human.

88. The method of claim 80, wherein said subject is a human.

89. The method of claim 81, wherein said subject is a human.

90. The method of claim 82, wherein said subject is a human.

91. The method of claim 83, wherein said subject is a human.

92. The method of claim 84, wherein said subject is a human.

93. The method of claim 85, wherein said subject is a human.